T-1044
sPHENIX Calorimeter

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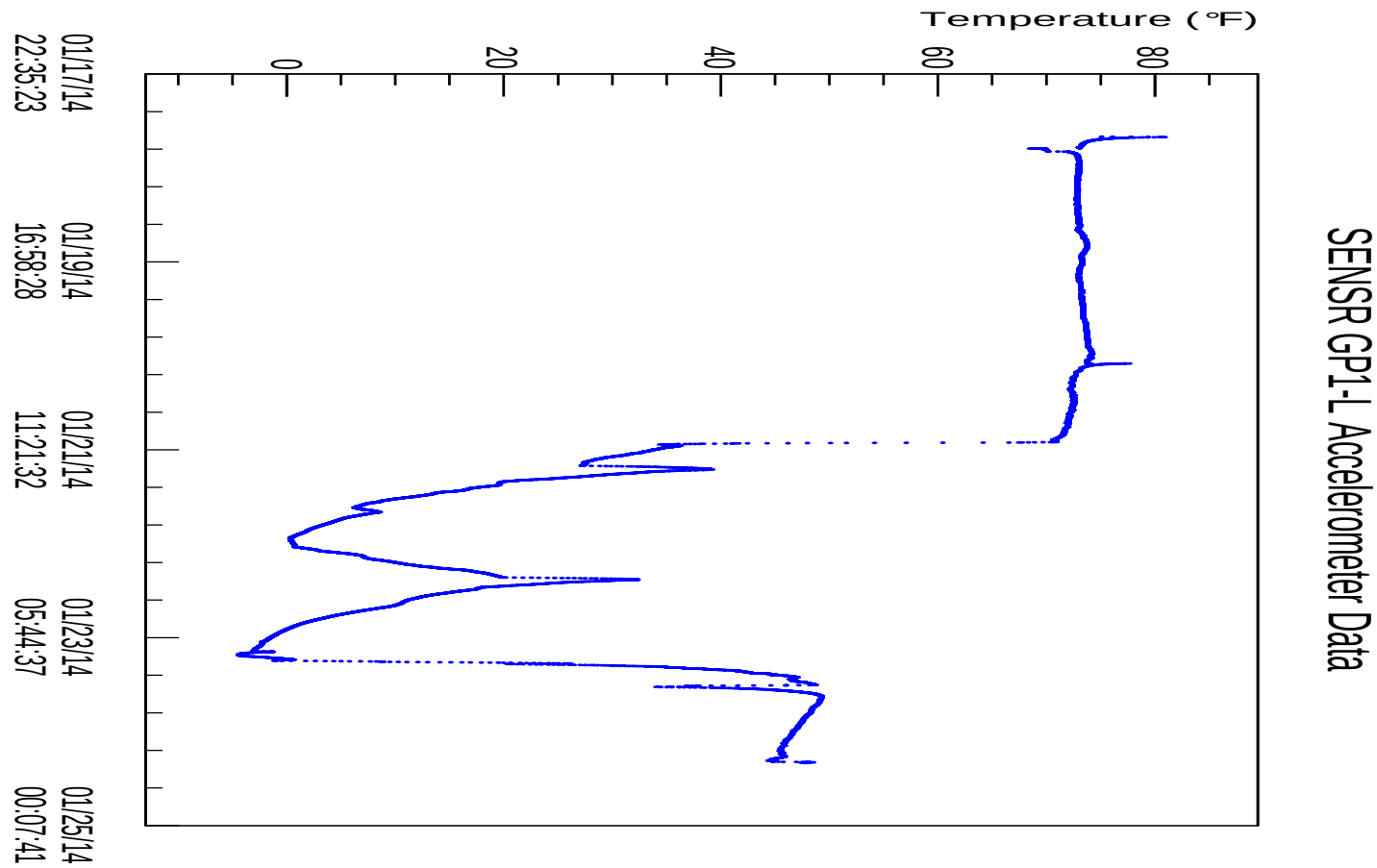
sPHENIX arrival timeline

- 4 ton prototype Hadron Calorimeter arrived January 23
- Set up outside MTEST for commissioning and debugging
- 100 lb Electromagnetic Calorimeter arrived shortly after
- January 27-31 Brookhaven techs helped get everything going outside the enclosure
- Todd Nebel had our HCAL rigged into the enclosure Wednesday, February 5
- ORC Thursday, February 6; completed action items Friday, February 7

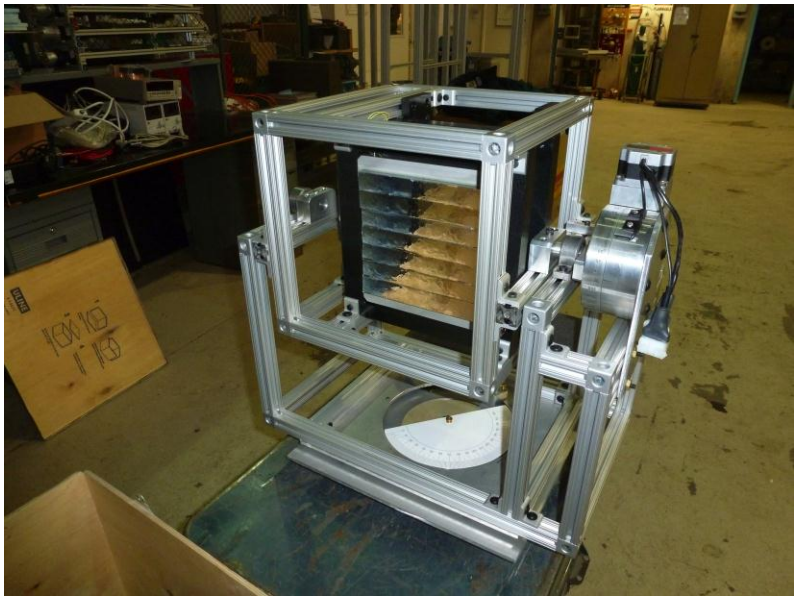


SENSR GP1-L Accelerometer Data

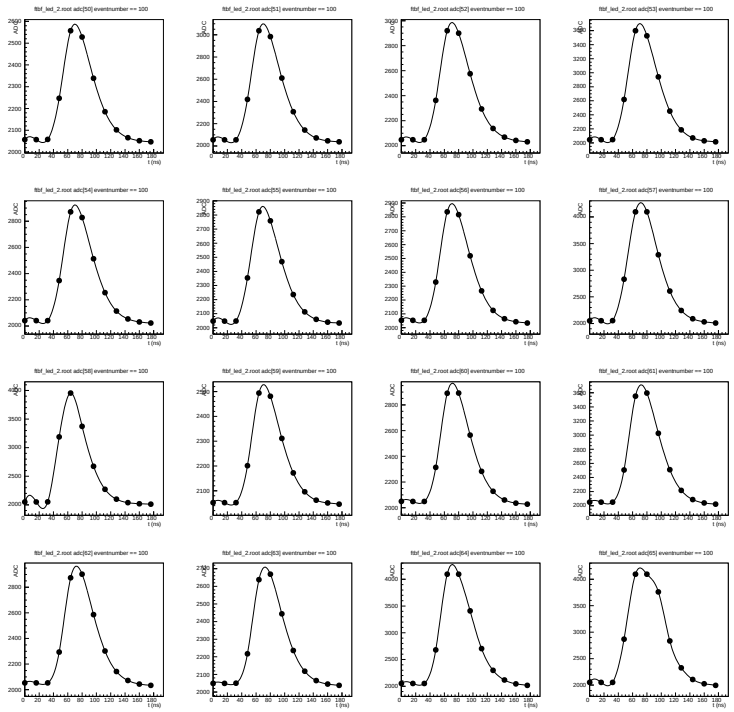

PEDOWITZ

Calorimeters

- Tungsten-scintillating fiber EMCAL (7x7)
- Steel-scintillator HCAL (WLS fiber in milled slots) (2 4x4 sections)
- Both read out with 3x3 mm SiPM's
- Digitized with 60 MHz waveform digitizers



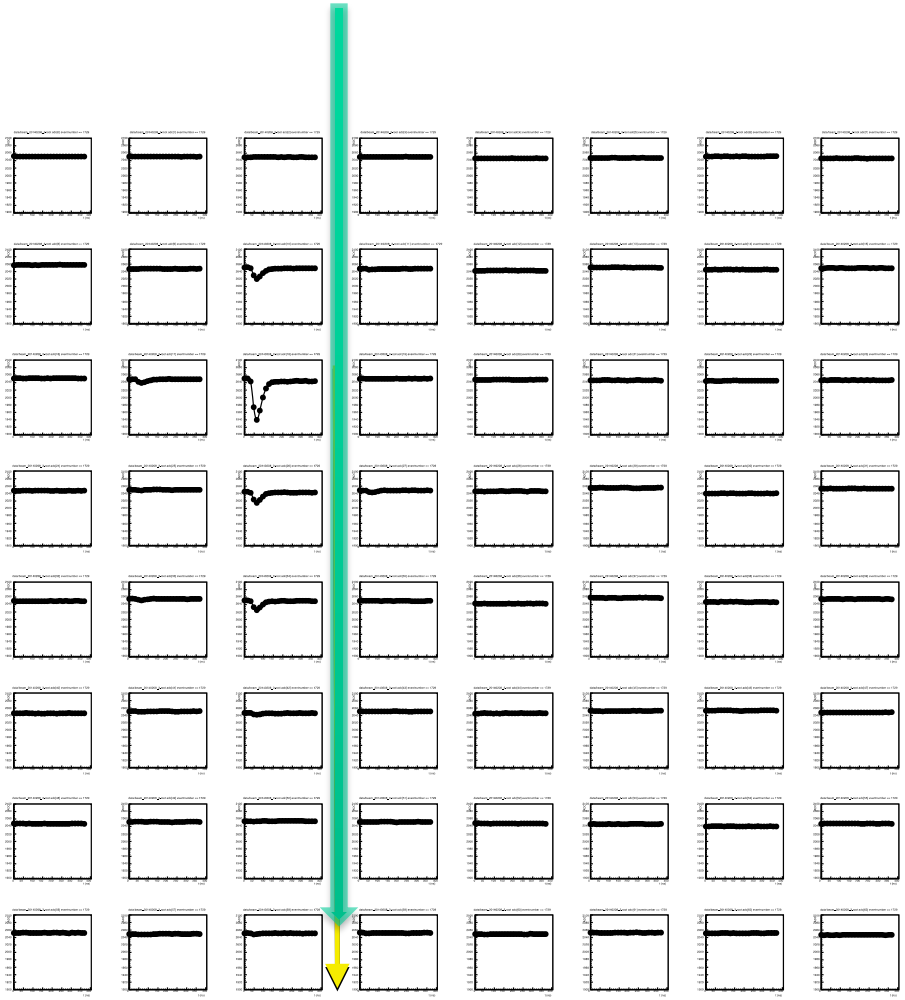
All channels see the LED



First weekend working with beam

- Set up and timed in trigger
- Put in small hodoscope in front of calorimeters
- Studied Cerenkov counter, PbGl
- Took first data from calorimeters

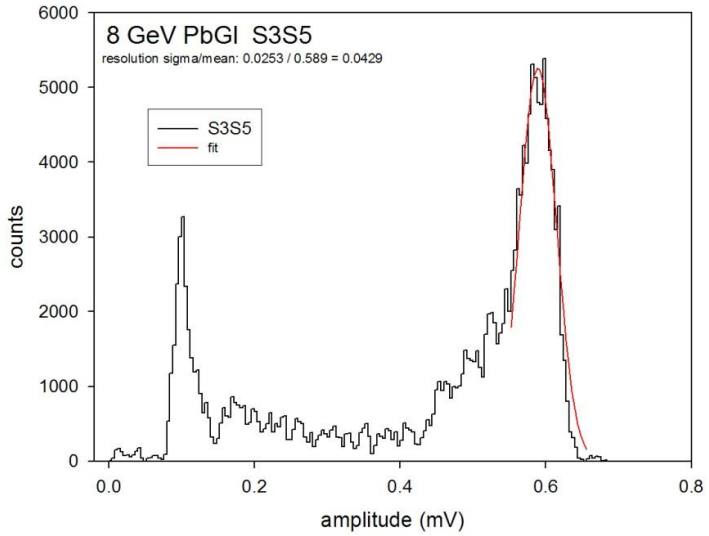
EMCAL event

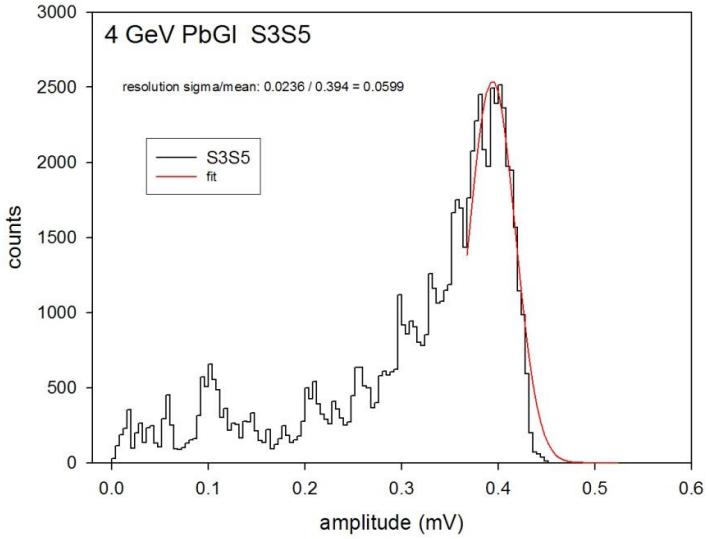


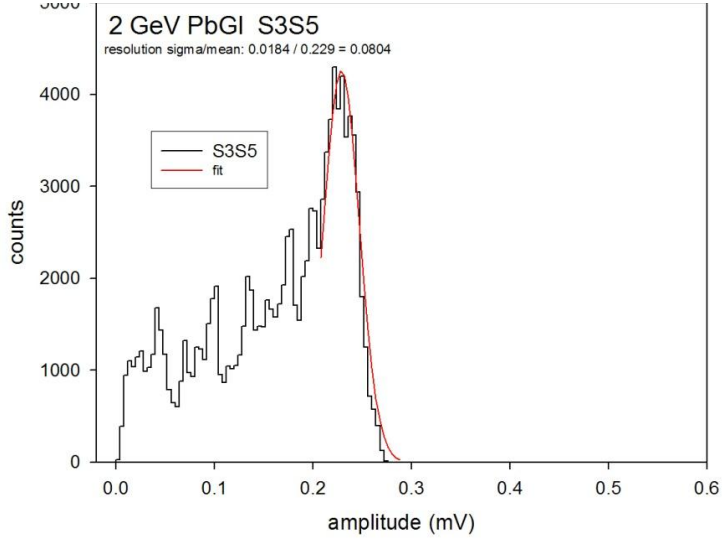
Our goals

1. Proof of principle of the calorimetry (basic geometry, SiPM, signal shaping, bias control, gain stabilization, waveform digitizing)
2. Light output from fibers (EMCAL) and tiles+WLS fiber (HCAL)
3. Test agreement with GEANT Monte Carlo in a real calorimeter (sampling fraction, linearity, angle)
4. Measure energy resolution of both calorimeters

Pb Glass Study – Beam Trigger







PbGl Block (14.5 x 14.5 x 35 cm)

Trigger = S3*S5*Spill

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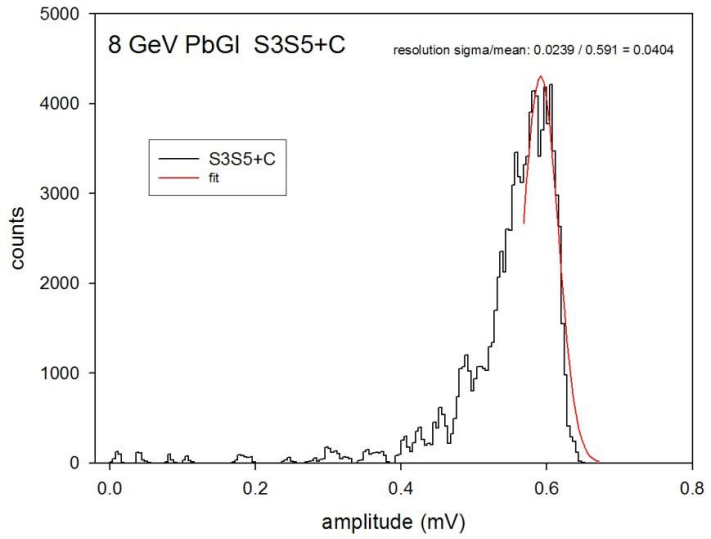
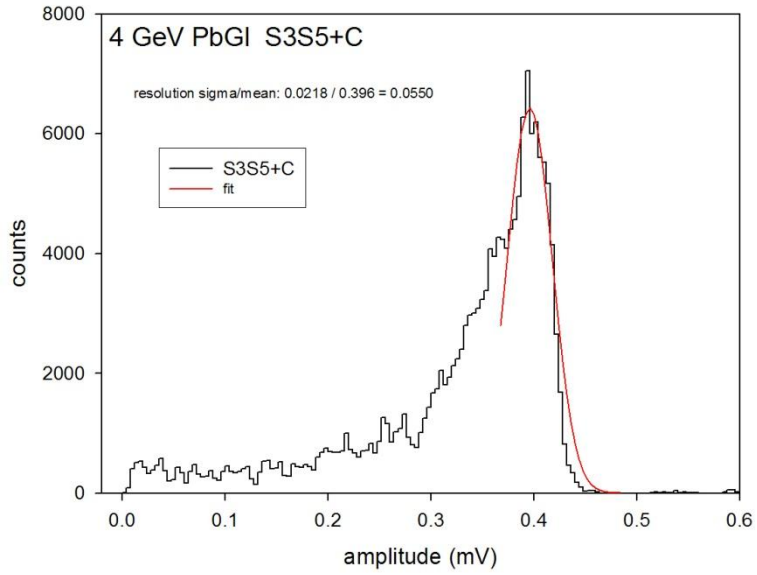
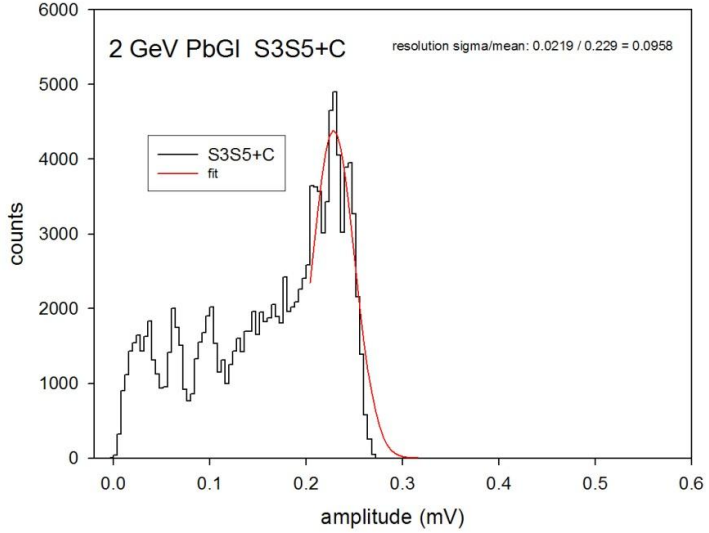
Pb Glass Study - Cherenkov Trigger







Trigger = C*S3*S5*Spill

- Beam is mostly electrons
- Long radiative tail due to material in the beam (our detector is at the end of the beamline)

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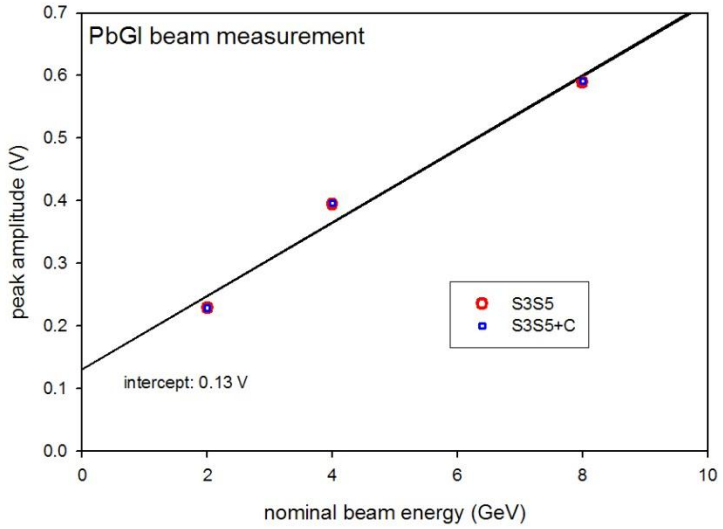
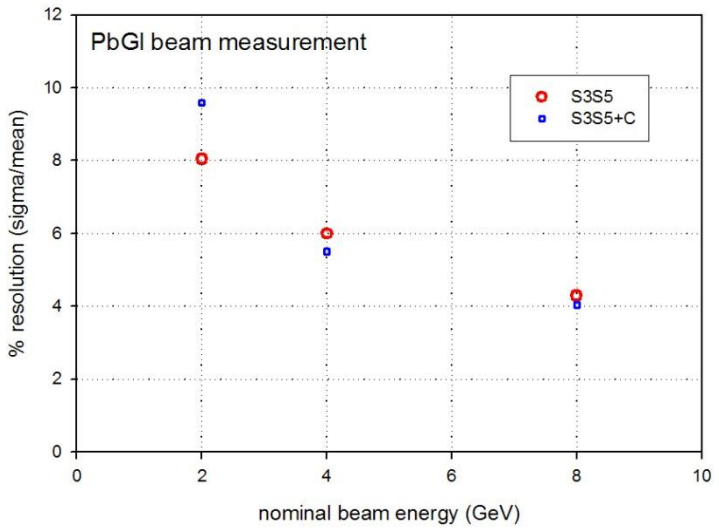
Pb Glass Study
Linearity & Energy Resolution





- Linearity looks ok
- Measured energy resolution dominated by leakage from PbGl (would improve with trigger centered on block)

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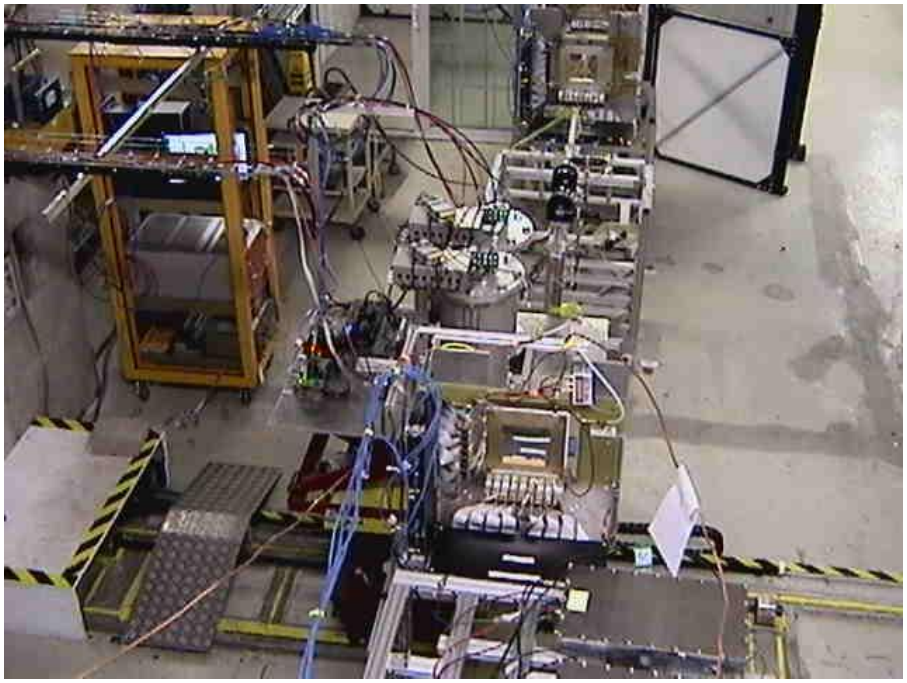
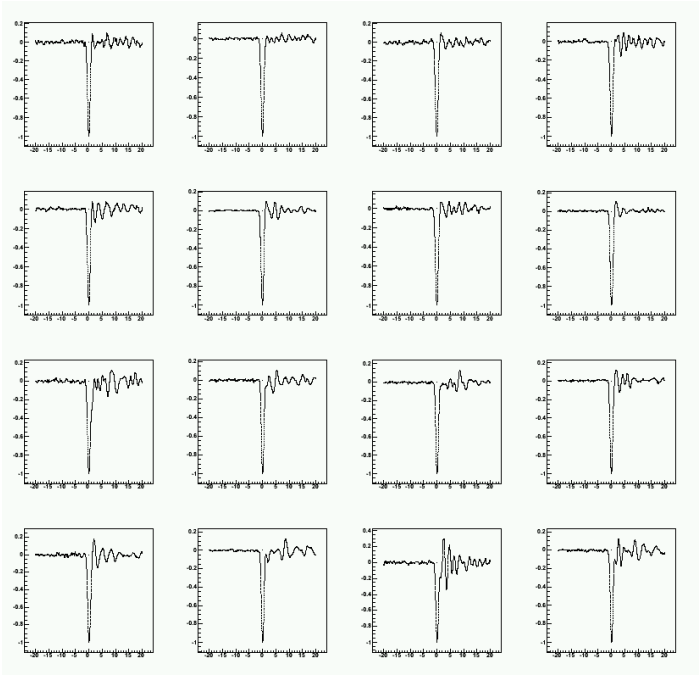
T-1048 Status





- Everything installed and running except for isobutane bottle.
  - With much help from Steve Gaugel, we expect delivery on Wednesday from Matheson.
  - Not clear if delivery is morning or afternoon.
  - Currently gas vessels out of beam-line, and running argon gas
  - Will switch over to R134A later today.
  - Lots of DAQ work on-going, integration of MWPC data. Currently MWPC readout not working.
    - Use our own trigger with MWPC?
- Taking data with Photonis XP85012 MCP-PMTs.
  - Any kind of charged particles are good (parasitic running is easy)
  - Lots of data for waveform templates, now doing fits and should have results soon